PATENT
Customer No. 22,852
Attorney Docket No. 06478-1457

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Juergen **ROEMISCH**, *et al.*

Application No.: Unassigned

Filed: Concurrently Herewith

For: MUTANTS OF THE FACTOR VII-ACTIVATING PROTEASE AND DETECTION METHODS USING SPECIFIC ANTIBODIES

Group Art Unit: Unassigned

Examiner: Unassigned

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

PRELIMINARY AMENDMENT

Prior to the examination of the above application, please amend this application as described below.

IN THE SPECIFICATION:

Please replace the paragraph at page 2, lines 29-36, and page 3, lines 1-24, with the following:

In order to exclude that the deficiency or reduction in unknown potential cofactors is responsible for the detected reduction in FSAP activity, FSAP samples of three donors whose donated samples had repeatedly shown significantly reduced activity were purified. The highly purified proteins likewise showed a markedly reduced activity

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compared with FSAP purified from the plasma pool. This reduces the possibility of a cofactor influence and increases that of a protein modification in the abovementioned sense. A surprising result was the apparently unreduced potential for activating factor VII. For this reason, mutants of this kind are particularly suitable for the abovementioned application as clotting-promoting agent, as described in the German Patent application 199 03 693.4, since their fibrinolytic potential is apparently limited. Said mutants may be prepared recombinantly or transgenically based on the findings described below of the nucleotide sequence modifications. However, they may, like the corresponding FSAP protein (single-chain or double-chain FSAP), also be isolated directly from natural sources such as blood plasma. The German Patent applications 199 03 693.4, 199 37 219.5 and 199 37 218.7 have already described methods which involve preparation of FSAP, preferably with the aid of immunoabsorption, as is illustrated in detail in the German Patent application 100 36 641.4. However, as far as it is known, the monoclonal antibodies used up until now do not discriminate between FSAP wild type and FSAP mutants. Accordingly, only monoclonal antibodies reacting specifically with the mutants can be used for preparing the mutants. It is possible to obtain the antibodies by immunization with the mutant. It is also possible to use peptides with protein regions corresponding to amino acids 389 to 397 (...SFRVQKIFK...) and/or 534 to 539 (...EKRPGV...) of SEQ ID NO:4 for immunization and for generation of corresponding antibodies according to known methods. In addition, said antibodies are also used to specifically detect said mutants, for example as reagents in detection methods such as ELISA Western Blots, in immunohistology or in fluorescence assisted cell sorting (=FACS).

Please replace the paragraph at page 6, lines 6-12, with the following:

The nucleotide sequence SEQ ID NO:1 of the attached sequence listing represents the wild type sequence. The DNA sequence of the mutant with the two exchanges at nucleotide positions 1177 and 1601 is described by SEQ ID NO:2 of the sequence listing. The corresponding wild type amino acid sequence can be found in SEQ ID NO:3. SEQ ID NO:4 shows the mutant amino acid sequence with the two amino acid exchanges (Glu-Gln 393 and Gly-Glu 534).

REMARKS

Two paragraphs of the specification have been replaced in order to place sequence listing citations in proper United States Patent and Trademark Office format. Further, at page 3, lines 18-22, sequences from the mutant factor VII-activating protease (FSAP) are recited, but reference is incorrectly made to SEQ ID NO:3, representing the wild type FSAP sequence, rather than to SEQ ID NO:4, representing the mutant sequence. This inadvertent error has been corrected.

If there is any fee due in connection with the filing of this Preliminary Amendment, please charge the fee to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.

Dated: July 25, 2001

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APPENDIX TO PRELIMINARY AMENDMENT

Amendments to the Specification

Please replace the paragraph at page 2, lines 29-36, and page 3, lines 1-24, with the following:

In order to exclude that the deficiency or reduction in unknown potential cofactors is responsible for the detected reduction in FSAP activity, FSAP samples of three donors whose donated samples had repeatedly shown significantly reduced activity were purified. The highly purified proteins likewise showed a markedly reduced activity compared with FSAP purified from the plasma pool. This reduces the possibility of a cofactor influence and increases that of a protein modification in the abovementioned sense. A surprising result was the apparently unreduced potential for activating factor VII. For this reason, mutants of this kind are particularly suitable for the abovementioned application as clotting-promoting agent, as described in the German Patent application 199 03 693.4, since their fibrinolytic potential is apparently limited. Said mutants may be prepared recombinantly or transgenically based on the findings described below of the nucleotide sequence modifications. However, they may, like the corresponding FSAP protein (single-chain or double-chain FSAP), also be isolated directly from natural sources such as blood plasma. The German Patent applications 199 03 693.4, 199 37 219.5 and 199 37 218.7 have already described methods which involve preparation of FSAP, preferably with the aid of immunoabsorption, as is illustrated in detail in the German Patent application 100 36 641.4. However, as far as it is known, the monoclonal antibodies used up until now do not discriminate between FSAP wild type and FSAP mutants. Accordingly, only monoclonal antibodies reacting specifically with the mutants can be used for preparing the mutants. It is possible to obtain the antibodies by immunization with the mutant. It is also possible to use peptides with protein regions corresponding to amino acids 389 to 397 (...SFRVQKIFK...) and/or 534 to 539 (...EKRPGV...) of [SEQ. ID No. 3 of the sequence listing] SEQ ID NO:4 for immunization and for generation of corresponding antibodies according to known methods. In addition, said antibodies are also used to specifically detect said mutants, for example as reagents in detection methods such as ELISA Western Blots, in immunohistology or in fluorescence assisted cell sorting (=FACS).

Please replace the paragraph at page 6, lines 6-12, with the following:

The nucleotide sequence [SEQ. ID No. 1] SEQ ID NO:1 of the attached sequence listing represents the wild type sequence. The DNA sequence of the mutant with the two exchanges at nucleotide positions 1177 and 1601 is described by [SEQ. ID No. 2] SEQ ID NO:2 of the sequence listing. The corresponding wild type amino acid sequence can be found in [SEQ ID No. 3 of the sequence listing] SEQ ID NO:3. [SEQ. ID No. 4] SEQ ID NO:4 shows the mutant amino acid sequence with the two amino acid exchanges (Glu-Gln 393 and Gly-Glu 534).

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